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ABSTRACT

A verbal skills curriculum program, designed for use with United States Navy recruits with deficiencies in English language listening and speaking skills was field tested at a recruit training station in Florida. The curriculum was self-paced and was composed of three learning modules: Navy-related vocabulary, grammatical structures, and language fluency. Subjects were 45 recruits, mainly from Puerto Rico, who completed the program in a 15-day course of study. A variety of reading and English fluency tests were administered as pretests and posttests to the recruits and to a control group. Results showed that the attrition rate was significantly lower for recruits in the program than for those in the control group. While English listening and speaking skills also improved, an economic analysis showed that these gains were achieved only with significant increases in costs associated with each recruit completing training. (An appendix contains excerpts from the curriculum guide.) (FL)

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TRAINING ANALYSIS AND EVALUATION GROUP

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TECHNICAL REPORT 128

FIELD TEST OF THE VERBAL SKILLS CURRICULUM

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TRAINING ANALYSIS AND EVALUATION GROUP
ORLANDO, FLORIDA 32813

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Technical Report 128

FIELD TEST OF THE VERBAL SKILLS CURRICULUM

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August 1982

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The full curriculum is contained in the supplement to this report. Most readers will find the excerpt from the curriculum contained in this volume sufficient and will not need the full curriculum guide.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A Verbal Skills Curriculum program, designed for recruits with deficiencies in English language listening and speaking, was field-tested at Recruit Training Command, Orlando, Florida. Forty-five recruits, mainly natives of Puerto Rico, completed the 15-day course prior to regular recruit training.

(continued on reverse)

20. ABSTRACT (continued)

Attrition rate was significantly lower for recruits participating in the program than for a control group. English listening and speaking skills were particularly improved. An economic analysis showed that these gains were achieved only with significant increases in costs associated with each participant completing recruit training. In addition to the costs and benefits mentioned above, equal employment opportunity (EEO) objectives and potential recruiting shortfalls must also be considered when making a decision as to whether or not to implement the course as a regular Navy program.

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SECTION I

INTRODUCTION

Department of Defense projections indicate that the manpower pool from which candidates for military service can be drawn is in a decline, which can be expected to continue until 1986 (Congressional Budget Office, 1981). As one consequence, the Navy is enlisting a significant number of recruits who speak English as a second language (ESL). Currently, about three percent of the Navy enlisted population have Hispanic backgrounds, and this number is expected to increase to about five percent within a few years. Many of these recruits encounter difficulty in recruit training due to their lack of proficiency in the English language.

A study by the Training Analysis and Evaluation Group (Salas, Kincaid, and Ashcroft, 1980) assessed the severity of the problems experienced by Spanish-speaking Hispanic recruits in recruit training. It was determined that these recruits had more difficulties in recruit training and a higher attrition rate than the recruit population as a whole. Many of the Hispanic recruits in the study could read English well enough to pass enlistment examinations but encountered severe difficulties with spoken English. As a group, they had lower scores on the Word Knowledge subtest of the Armed Services Vocational Aptitude Battery (ASVAB), lower Armed Forces Qualification Test (AFQT) scores derived from the ASVAB, and lower Gates-MacGinitie Reading Test scores (MacGinitie, 1978) than recruits in general. A high proportion of this group had reading abilities lower than sixth grade which is considered the level necessary to function in recruit training. The severe language deficiencies of this group were also mentioned repeatedly as a problem by company commanders, instructors, and the recruits themselves. These problems correlated with a higher attrition rate, a higher referral to Academic Remedial Training (ART), and more difficulty with recruit training academic tests than for the total recruit population.

Another TAEG study (Brown, 1982) reported that there are also a number of English-speaking recruits in the Navy who have oral language difficulties; however, the relationship of this deficiency to attrition and other performance-related problems has not been well demonstrated. A large percentage of recruits of both types are located at the Recruit Training Commands in San Diego and Orlando.

Salas, et al. (1980) recommended that an oral skills program module be developed to increase the language fluency of recruits experiencing language difficulty. The objectives of that language module were to develop:

- oral language skills, particularly speaking and listening
- the military vocabulary and terminology needed to successfully complete recruit training.

To implement these recommendations, the Chief of Naval Technical Training (CNTECHTRA) contracted with Memphis State University to develop a Verbal Skills Curriculum designed to provide remediation in language skills. The

Chief of Naval Education and Training (CNET) then tasked the TAEG[1] to implement and evaluate the curriculum at the Recruit Training Command (RTC), Orlando.

PURPOSE OF THIS REPORT

This report describes the Verbal Skills program and presents the results of a field test of the program with recruits who speak English as a second language. The report also presents the results of a comparative cost analysis of the Verbal Skills training program.

ORGANIZATION OF THE REPORT

In addition to this introduction, the report contains four sections and an appendix. Section II describes the Verbal Skills Curriculum, the procedures for selecting recruits for participation in the program, the tests for assessing the effectiveness of the program, and the characteristics of recruits enrolled in the program. Section III summarizes the results of the study in terms of student performance. Section IV presents a cost and benefit analysis of the program. Section V presents conclusions and recommendations. The appendix presents excerpts from the Navy Verbal Skills Curriculum Guide. The entire curriculum guide is contained in a supplement to this report.[2]

[1]CNET ltr Code 022 of 25 Nov 1980.

[2]The excerpt contained in the appendix should be sufficient for most readers of this report. Those who are interested in implementing the full curriculum or in using the curriculum as a prototype will want the supplement.

SECTION II

CURRICULUM AND EVALUATION PROCEDURES

This section describes the: (1) verbal skills curriculum, (2) screening of subjects for the field test, (3) Navy recruits who served as subjects, and (4) tests used to measure mastery of the course material.

CURRICULUM

The Verbal Skills Curriculum provides remedial instruction to recruits experiencing difficulty in English language speaking or listening skills. English language problems may be due to economic/cultural deprivation or to English being a second language.

The curriculum, which was designed to be self-paced, is composed of three learning modules: Navy Vocabulary, Grammatical Structures, and Language Fluency.

- Navy Vocabulary: Navy-relevant vocabulary is presented in verbal context. The student is expected to recognize and define these words.
- Grammatical Structures: This module is designed to increase the student's correct usage of pronouns and their appropriate referents, plural and possessive forms of nouns, active and passive forms of selected verbs and various verb tenses.
- Language Fluency: This module is designed to increase the student's skill of listening and deriving literal and inferential meanings from context passages.

General objectives of the curriculum address these three broad skill areas and terminal objectives specify performance requirements for exhibiting mastery of each section of the module. Criterion-referenced pretests and posttests were developed for each terminal objective. Students in the program were administered an informal criterion-referenced test before beginning the instruction for each terminal objective in a module. If mastery was demonstrated by a criterion score of 80 percent or more, the student proceeded to the next objective. If mastery was not achieved, the student was prescribed study materials. When the student completed the assignments for an objective, the criterion-referenced posttest was administered. If mastery was demonstrated at this point, the student moved to the next objective, but if not, additional study was assigned until mastery was demonstrated. Excerpts from the curriculum, including sample criterion tests, are contained in the appendix.

The same sequence of testing and study was followed for each module in the Verbal Skills Curriculum until all modules were completed. The curriculum takes an average of 15 instructional days to complete. New students may enter the course at any time.

Although no Verbal Skills students in this study were referred to the ART reading curriculum, ART staff noted that some of the students would have benefitted from placement in individually prescribed select reading modules.

SCREENING PROCEDURES

The following three criteria were used to refer recruits to the Verbal Skills Curriculum: (1) scores between the fourth and sixth grade level on the Gates-MacGinitie Reading Test and assignment to the ART program, (2) English spoken as a second language, and (3) oral English competency judged to be a problem, as determined by a score less that 80 on the English Comprehension Level (ECL) Test and a brief interview conducted in English. The interview provided information about the country of origin, predominant language spoken at home and in social situations, and whether or not the recruit had any prior education in the United States.

Initial screening began when all new recruits were tested with the Gates-MacGinitie at the beginning of recruit training. Then, in the group referred to the ART program, ART instructors looked for students who spoke English as a second language (ESL). The screening process continued with referral of students who met the ESL criterion to the Verbal Skills instructor who administered the ECL Test and conducted the interview. This method worked well for the purpose of this study (to select ESL students with language difficulties), and it resulted in minimum interference with routine activities in recruit training and ART.

The Gates-MacGinitie and ECL Tests are described in the following pages along with other tests used in this study. The ART program is described in Kincaid and Curry (1979).

SUBJECTS

The subjects were 42 male and 4 female recruits. Puerto Ricans comprised the largest ethnic group (41). The remaining recruits were from the Philippines (3), Korea (1), and Mexico (1). The predominant language spoken at home for the majority of recruits was Spanish (42). Other languages spoken at home were Tagalog (2), Ilacano (1), and Korean (1). Forty-one of the 46 subjects had no prior education in the United States. The group mean on the Word Knowledge (WK) subtest of the ASVAB was 41.0 which is considerably lower than the Navy mean score of 52.9[3]

TESTS USED TO ASSESS COURSE MASTERY

The following tests were given to every subject included in the study. Time and technique of administration (group or individual) are described in the discussion of each test.

ENGLISH COMPREHENSION LEVEL (ECL) TEST. This test was developed by the Defense Language Institute (DLI) and is currently used by the U.S. Army as the screening test for their English as a second language program. The ECL Test was designed to determine English language proficiency in listening and reading. The aural portion (part I) of the examination, which is recorded on magnetic

[3]Based on the CMI Recruit Population Analysis Report, May 1981, produced by the Management Information and Instructional Systems Activity (MIISA).

tape, is designed to determine the student's ability to understand spoken English. The reading portion (part II) is designed to test the ability of a student to use correct grammatical forms and to understand written material. The aural portion requires 33 minutes. The reading portion requires 35 minutes. Both are group administered.

The Salas, et al. (1980) study showed the ECL Test to be an excellent predictor of success in recruit training for Spanish-speaking Hispanics.

GATES-MACGINITIE READING TEST, LEVEL D. The Gates-MacGinitie Reading Test consists of two parts--vocabulary and reading comprehension. Only the reading comprehension subtest was administered to the subjects. This subtest measures the student's ability to read prose passages from various literary and subject-matter fields. The test is written for students of intermediate grades (4-6). Scores are reported as Reading Grade Levels (RGL). The comprehension test requires 35 minutes and is administered in a group.

STANFORD DIAGNOSTIC READING TEST (SDRT), BROWN LEVEL. The Stanford Diagnostic Reading Test (Karlsen, Madden, and Gardner, 1976) consists of five subtests. Two of these subtests, Auditory Vocabulary and Reading Comprehension, were administered to the subjects of this study. The Brown Level is intended for use with students in grades 5 through 8 and low-achieving high school students.

Auditory Vocabulary measures the student's ability to aurally recognize common meanings of words frequently found in intermediate grade reading materials in the areas of reading, literature, mathematics, science, social studies and the arts. Reading Comprehension measures the student's ability to make literal and inferential comprehension of short reading passages. The passages represent a variety of subject-matter areas. The Auditory Vocabulary subtest requires 20 minutes and Reading Comprehension 35 minutes. Total time for individual administration is 55 minutes. Scores are reported as Grade Level Equivalents.

SECTION III

RESULTS

This section presents the results of the field test of the Verbal Skills program. The results are organized into two parts: (1) analyses of the achievement performance of recruits who participated in the Verbal Skills program and (2) a description of the group's academic performance and attrition in recruit training. Whenever data are available, the performance of the Verbal Skills group is compared to the performance of Hispanic ESL recruits described by Salas, et al. (1980) who were referred to ART but did not receive specialized Verbal Skills training.

PRETEST-POSTTEST ANALYSES

Results from the battery of tests used to evaluate the performance of recruits in the Verbal Skills program are reported in table 1. For each test, pretraining score, posttraining score, and mean change in score are shown.

The data indicate that the group made significant gains in verbal language proficiency by the end of Verbal Skills training. The ECL mean score increased by 8.4 points. The posttest ECL mean (67.5) was near the DLI's usual cutoff score of 70.

TABLE 1. SUMMARY OF CHANGE SCORES ON TESTS GIVEN TO RECRUITS BEFORE AND AFTER THE VERBAL SKILLS PROGRAM

Test	Pretest Mean	Posttest Mean	Mean Change**
English Comprehension Level Test (ECL)	59.1	67.5	+ 8.4
Gates-MacGinitie Reading Test (RGL)	4.7*	6.5	+ 1.8
Stanford Diagnostic Reading Test: Comprehension	5.7*	6.4	+ .7
Stanford Diagnostic Reading Test: Auditory Vocabulary	5.1*	6.1	+ 1.0

*The mean score is reported as a grade level.
**All mean change scores are significant ($p<.01$).

The data also show that the group attained a sixth grade reading level by the end of the Verbal Skills program. Grade level gains were demonstrated

on the SDRT Comprehension subtest (+.7), the SDRT Auditory Vocabulary subtest (+1.0), and the Gates-MacGinitie Reading Test (+1.8).

To analyze the statistical significance of the mean change in test performance (from pretest to posttest), *t* tests for matched pairs were computed. For each *t* test, only those recruits who had both a pretest and a posttest score were included in the analysis. The obtained *t* values ranged from +3.26 to +8.47 and all were significant ($p < .01$). Students in the field test of the Verbal Skills reached a sixth grade level of verbal and reading performance. This is the level designated by the Navy as adequate for successful completion of recruit training.

PERFORMANCE IN RECRUIT TRAINING

Important measures of the value of the Verbal Skills program came after the recruits left the program and began recruit training. Performance on the four recruit training academic tests and satisfactory completion of recruit training (attrition) were examined. The attrition rate of the Verbal Skills group was compared to a control group of 33 Hispanic ESL recruits who had been referred to ART but had not received specific verbal language remediation. The group was not a typical control group used in evaluation studies of this type;[4] however, characteristics of the group (described in table 2) showed them to be similar enough to the Verbal Skills group to justify the comparison. More information about the control group can be found in Salas, et al. (1980).

TABLE 2. COMPARISON OF RECRUITS REFERRED TO THE VERBAL SKILLS PROGRAM WITH THE CONTROL GROUP (NOT REFERRED)

	Verbal Skills Group	Control Group
Number of recruits	46	33
Proportion Who Did Not Graduate from Recruit Training	6/46 (13.0%)	9/33 (27.3%)
Reading Grade Level (RGL)*	4.6	5.0
English Comprehension Level (ECL) Test Score*	59.1	65.4
ASVAB - Word Knowledge (WK)	41.0	44.2

*Before remedial training

[4]A true control group would have contained randomly chosen ESL recruits not assigned to the Verbal Skills program, but an administrative decision was made not to deny the program to any recruit who needed it.

Table 2 indicates that a higher percentage of the Verbal Skills group graduated from recruit training. Although recruits in the control group began their remedial training (ART) with slightly higher language skills as measured by RGL, ECL, and WK, they had a higher percentage of attrition from recruit training (27.3 percent) than the Verbal Skills group (13.0 percent).

Of the 40 recruits in the Verbal Skills group who graduated from recruit training, 12 continued their training at one of the "A" schools and 28 went on to apprentice training. Of the six recruits who did not graduate from recruit training, only two were discharged for reasons clearly related to English language deficiency.

The Verbal Skills recruits who graduated from recruit training failed a mean of 0.8 academic tests (out of four) during recruit training. This was considerably better than the mean of 1.8 failures obtained for the control group.

SECTION IV

ECONOMIC EVALUATION

Two potential benefits from the Verbal Skills program need to be evaluated in order to make an objective analysis of the cost effectiveness of the program.

First, the language deficiency of many of these recruits impairs their ability to complete even basic military training and the result is a relatively high rate of attrition for these recruits. An immediate and quantifiable benefit of the program is a reduction in attrition. The lower attrition rate reduces the average costs of training which can be evaluated against the program costs.

A second benefit of the Verbal Skills program which does not lend itself to easy economic quantification arises from the improved ability of those students who complete the program to perform in subsequent Navy duties. Performance measures are reported in section III which assess the improvement in verbal and reading skills which can be attributed to the program. However, whether these measures of improvement translate into improved job performance and whether that improvement in job performance is worth the cost of the program presents some formidable problems of measurement and evaluation.

The economic analysis is not intended to be used as the sole basis for making a decision about the cost effectiveness of the program. Instead, it is intended to provide objective data which can be used to support a decision about the desirability of implementing a Verbal Skills program into the RTC curriculum.

The incremental investment costs necessary to establish and implement the Verbal Skills program at the RTCs are essentially zero. The instruction takes place in a typical classroom which requires no special equipment other than that normally found in a typical group-paced classroom. The only additional materials required are curriculum materials for which the development costs are already incurred.

For purposes of this analysis, the cost of classroom equipment, curriculum materials, and miscellaneous instructional materials are assumed to be the same as those required for classroom instruction in basic military training. Since the annual costs would be constant over the period under consideration, the following cost analysis does not employ discounting or life-cycle costing. The costs computed are the projected annual costs of executing the program and under ceteris paribus conditions would remain constant from year to year. However, changes in inflation rates, resource price ratios, and administrative program changes might cause the real long-term costs of the program to change.

The daily cost of maintaining a recruit in the Verbal Skills Curriculum is assumed to be the same as the cost of maintaining a typical recruit in basic military training. Student salaries, billeting costs, medical costs, facilities costs, and other administrative and overhead costs should not differ significantly between Verbal Skills training or basic military training.

The cost analysis is based on the following assumptions:

- The instructor-to-student ratio will be 1:15.
- The desirable class size should not exceed 15 students.
- The program will be offered at San Diego and Orlando (the areas of most need according to Brown, 1982).
- Average course length will be 15 instructional days (21 calendar days).
- Initial development costs for the Verbal Skills program are "sunk costs," i.e., already incurred, and irrelevant to any pending decision to implement the program.
- The cost of maintaining a student while participating in the program will be the same as the cost incurred in RTC.
- The attrition rate of those students requiring Verbal Skills training can be reduced from an estimated 30 percent to 15 percent if those recruits are required to go through the program.
- Full-time instructors would be required and the cost of an instructor was assumed to be $25,000.
- There would be the equivalent of an average of 15 class convenings per year at both Orlando and San Diego.

The number of recruits requiring Verbal Skills training will depend upon the total number of recruits as well as the proportion of that total which proves to be deficient in language proficiency. Table 3 provides estimates of the number of recruits requiring training. The estimates are based upon a throughput of 29,800 recruits through Orlando and 27,000 through San Diego. The percent requiring Verbal Skills training is estimated at four levels ranging from one-half of one percent to four percent of the throughput.

Table 4 shows the estimated number of attrites which could be expected for an RTC program which would not include the Verbal Skills program and the attrites for a program which does. The number of recruits requiring Verbal Skills training is 284 based on the assumption that one-half of one percent of all recruits entering the Navy at San Diego and Orlando would need this additional training. The remaining estimates, reading down the column, are for one, two, and four percent, respectively.

The estimates of the costs of the program were computed using the CNET per capita cost data base. Two sets of cost estimates for the Verbal Skills Curriculum are presented below. The first assumes that the program would become fully implemented into the RTC program and over the long run would place a burden on the overhead functions such that long-run adjustments would be required resulting in a proportionate increase in total training

TABLE 3. ESTIMATED ANNUAL NUMBER OF NAVY RECRUITS REQUIRING VERBAL SKILLS TRAINING AT ORLANDO AND SAN DIEGO

Recruits		Percent Requiring Training*	Number Requiring Training*	
Orlando	San Diego		Orlando	San Diego
29,800	27,000	0.5	149	135
29,800	27,000	1.0	298	270
29,800	27,000	2.0	596	540
29,800	27,000	4.0	1,192	1,080

*Verbal Skills Curriculum

TABLE 4. EXPECTED NUMBER OF ATTRITES WITH AND WITHOUT THE VERBAL SKILLS TRAINING

Total Requiring Verbal Skills Training		Attrition Without Training		Attrition With Training	
Percentage	Number	Percentage	Number	Percentage	Number
0.5	284	30	85	15	43
1.0	568	30	170	15	85
2.0	1,136	30	341	15	170
4.0	2,272	30	682	15	341

costs. This assumption would be most realistic if in fact a high percentage of the recruits required Verbal Skills remedial training and if the program were to significantly expand and compete for resources required for the remaining RTC functions. For the Verbal Skills Curriculum to remain a viable part of the RTC program, it would need to be fully funded over the long run. The costs are estimated on a long-run average cost basis. The estimated costs using the first approach are presented in table 5.

TABLE 5. TOTAL COST ESTIMATES OF THE VERBAL SKILLS CURRICULUM

Requirements		Costs ($1,000)		
Percentage of Recruits	Number	Orlando	San Diego	Total
0.5	284	$ 161	$ 150	$ 311
1.0	568	321	277	598
2.0	1,136	616	553	1,169
4.0	2,272	1,183	1,106	2,289

The second set of cost estimates are incremental cost estimates and include only an estimate of the direct costs of the program. These estimates would be most realistic if the throughput remains relatively low over the long run such that the curriculum can be operated using facilities and equipment already available. The program would be on a time- and space-available basis. A relatively small program would have little or no impact on the overhead costs, even in the long run. The estimated costs using the latter approach are presented in table 6.

TABLE 6. TOTAL DIRECT COST ESTIMATES OF THE VERBAL SKILLS CURRICULUM

Requirements		Costs ($1,000)		
Percentage of Recruits	Number	Orlando	San Diego	Total
0.5	284	$ 122	$ 110	$ 232
1.0	568	243	195	438
2.0	1,136	461	389	850
4.0	2,272	871	779	1,650

The costs per recruit retained because of the program are shown in tables 7 and 8. The costs in table 7 are based upon the assumption that all overhead costs are fully attributed to the program. For relatively low throughput, an estimated $7,200 will be spent for each recruit retained by application of the Verbal Skills Curriculum. There would be some slight economies as the throughput increases, primarily attributed to the fact that most class convenings would be filled. The costs in table 8 include only the direct costs of the program. These costs vary from $5,400 per recruit to $4,800, depending on the throughput.

TABLE 7. ESTIMATED COST PER RECRUIT TRAINED INCLUDING BOTH DIRECT AND INDIRECT COSTS

Percentage Requiring Training	Number Retained by Training	Total Cost ($1,000)	Average Cost Per Retained Recruit
0.5	43	$ 311	$7,200
1.0	85	598	7,000
2.0	170	1,169	6,900
4.0	341	2,289	6,700

TABLE 8. ESTIMATED COST PER RECRUIT TRAINED INCLUDING DIRECT COSTS

Percentage Requiring Training	Number Retained by Training	Total Cost ($1,000)	Average Cost Per Retained Recruit
0.5	43	$ 232	$5,400
1.0	85	438	5,100
2.0	170	850	5,000
4.0	341	1,650	4,800

Since training will reduce the number which attrite from recruit training, it will not be necessary for the Navy to incur the recruiting costs to replace these attrites. The recruiting costs are estimated at $2,000 per recruit. In addition to the savings in recruiting costs, there will be minor savings in attrition costs. The cost of training the recruits to the point where they would have attrited will not have to be incurred for a new group of

recruits. However, the entire attrition costs cannot be eliminated, for one would expect that any given group of recruits would have a normal attrition rate. Assuming that recruits attrite at a uniform rate during recruit training, then the average attrition costs adjusted for normal attrition, are estimated at $1,000 per recruit retained. The potential "savings" and net costs are presented in table 9.

TABLE 9. ESTIMATED NET COST PER RECRUIT INCLUDING BOTH DIRECT AND INDIRECT COSTS

Percentage Requiring Training	Number Retained by Training	Average Cost Per Recruit	"Savings"	Net Cost
0.5	43	$7,200	$3,000	$4,200
1.0	55	7,000	3,000	4,000
2.0	170	6,900	3,000	3,900
4.0	341	6,700	3,000	3,700

SECTION V

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

This study demonstrated that recruits who participated in the field test of the Verbal Skills program substantially improved their English language skills. Significant improvements in performance were obtained on each of four tests of English verbal and reading ability. The improvements in reading and verbal skills brought the students up to minimum levels which empirical evidence has demonstrated is necessary for success in early military training.

Recruits given an opportunity to participate in the Verbal Skills program showed a lower attrition rate and fewer academic setbacks in recruit training than a group of recruits with English language deficiencies who were not given that opportunity.

One cost advantage of the Verbal Skills program is that attrition of those recruits requiring and receiving the training can be reduced. The attrition rate was 13 percent for Verbal Skills students and 27 percent for the control group. Consequently, the number of recruits with language deficiencies who are retained will increase. The current recruiting costs of approximately $2,000 per recruit can be used to offset the Verbal Skills program costs. Another cost advantage is that $1,000 per recruit for attrition costs can be saved. This cost can also be used to offset program costs.

If the Verbal Skills program costs are reduced by the amount of the recruiting costs and attrition costs then the additional direct costs of the program will be approximately $2,000 per recruit retained. If all overhead and indirect costs are included, the average total cost is estimated to be $4,000 per recruit retained. Because there are additional costs of the program, the decision to implement the program must be made on the basis of a subjective evaluation of the qualitative benefits of the program versus the program costs.

A number of benefits of the Verbal Skills program cannot be easily quantified, but they should be considered when attempting to resolve the issue of whether or not there is sufficient justification to undertake the program on a permanent basis.

First, the program is consistent with Navy Equal Employment Opportunity (EEO) objectives. It supports the Chief of Naval Operations (CNO) effort to increase and maintain the participation of Hispanics and other minority groups in the Navy. In accordance with affirmative action principles, the program provides an opportunity for individuals who might otherwise be excluded from the Navy simply because of their language deficiency.

Second, the program also addresses the problem of future recruiting shortfalls. The availability of Verbal Skills training will make it possible to add to the pool of candidates for military service those who speak English as a second language.

Third, a primary benefit of the program is that it will increase the probability of retaining a number of recruits of above average mental ability with the potential for above average performance in the fleet. Many Puerto Rican and Philippine recruits who fail recruit training do so because of their lack of training in the English language and not because of low mental ability. The high ability levels of these recruits were recently demonstrated when a sample of Hispanic recruits were given reading tests in their native language.

And, finally, by reducing language barriers, the program has the potential to reduce behavior problems, enhance motivation, and increase productive naval service in the group of recruits it serves.

RECOMMENDATIONS

The following recommendations are made on the assumption that this program will be implemented:

- implement the Verbal Skills program for recruits who need oral language remediation
- implement the program only at RTC, Orlando and San Diego. The greatest need for the program occurs at these two locations.
- give priority for placement into the program to students who speak English as a second language. English speaking students with deficient verbal skills should be enrolled if classroom seats are not filled.
- administer the ECL Test to every recruit referred to ART in Orlando and San Diego. This will be the speediest method for discovering recruits who need Verbal Skills training.
- use the following criteria to refer students to the Verbal Skills program:
  - score less than 80 on the ECL Test
  - deficient in speaking or understanding English, identified in a brief interview by Verbal Skills staff.
- refer recruits in the Verbal Skills program to ART reading modules, as needed, with the exception of the Phonics module. All recruits should be tested for placement in various modules of ART.

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APPENDIX

EXCERPTS FROM THE NAVY VERBAL SKILLS CURRICULUM GUIDE

These excerpts from the Navy Verbal Skills Curriculum Guide are representative of the curriculum's various parts. Lesson 6 on the topic of "Navy Words with Unusual Pronunciations" is used as the example. It is taken from the first module, Navy Vocabulary. Besides providing the enabling objective (1.22), the lesson plan specifies materials needed, directions to the instructor, prescriptions for individual practice, and follow-up activities. Examples of prescription worksheets and the answers are presented next, and then finally a pretest and posttest, based on terminal objective 1.2 are shown. The tests include questions from all topics covered under objective 1.2 (1.21-1.24), and therefore test more than Lesson 6 alone.

The complete Navy Verbal Skills Curriculum Guide is contained in the supplement to this report.

LESSON 6

I. TOPIC: NAVY WORDS WITH UNUSUAL PRONUNCIATIONS

II. OBJECTIVE: Given an oral reading instructional format, the student will pronounce words with unusual pronunciations correctly with an accuracy of at least 80 percent.

III. TIME: 1 1/2 hour

IV. MATERIALS:

1. Instructor's copy of Improving Your Navy Reading Skills by TAEG
2. Chalkboard and chalk
3. Worksheets from the Appendix A
4. The Bluejackets' Manual, 20th ed.
5. Flashcards of the following words with sentences written on back:

corps	coxswain
boatswain	gunwale
*forecastle	quay
*tackle	ensign
Greenwich	lead
leeward	yeoman

*write forecastle and tackle on same flashcard

V. DIRECTIONS TO THE INSTRUCTOR

INSTRUCTOR'S ACTIVITIES

READINESS:

The purpose of this lesson is to acquaint the students with the pronunciations of some Navy words with unusual pronunciations.

Explain the purpose of the lesson to the students.

Check the flashcards to be sure they are in the proper order.

INSTRUCTION:

The instructor will introduce the words with flashcards. While showing the students the word on the flashcard, the instructor will use the word in a sentence.

The pronunciations and meanings of the words are found on pp. 103-104 of Improving Your Navy Reading Skills.

Show the flashcard to the students.

Read the accompanying sentence (or one of your own) to the students.

1. corps - The Marine Corps is a military unit in this country.
2. boatswain - The boatswain's mate blew his whistle to get the crew's attention.
3. forecastle - The anchor and tackle are found
4. tackle - in the forecastle of the ship.
5. Greenwich - All clocks are set according to Greenwich Mean Time.
6. leeward - The ship turned leeward as the storm approached.
7. coxswain - The coxswain kept the boat in shipshape.
8. gunwale - The men held onto the gunwales of the ship as it tossed about in the storm.
9. quay - The merchant vessel was moored in the quay as its cargo was unloaded.
10. ensign - Our national ensign was flying from the stern of the ship.

11. lead - The sailor measured the depth of the water with the lead.

12. yeoman - The yeoman typed a letter for the captain.

Show each flashcard to the students again and discuss the definition of the word.

Review the pronunciations of the words. Have each student pronounce each word.

DRILL AND PRACTICE:

The flashcards are used in this phase to be sure each student knows the pronunciations of the words.

Using the flashcards, go around the room and have the students pronounce various words from the lesson and give the meanings. Vary the order of the presentation of the words.

Assign the Prescriptions for individual practice.

EVALUATION:

Evaluation should be done informally after Prescriptions have been assigned. The flashcards will be used in the evaluation.

Using the flashcards, ask the student to pronounce 10 of the words and give their meaning. Student should get 8 of 10 correct before moving to new material.

VI. PRESCRIPTIONS FOR INDIVIDUAL PRACTICE

TOPIC	MATERIALS			INSTRUCTIONS	GROUPING
	Appendix	Lesson	Worksheet		
	A	6	1	Say the pronunciation on the left aloud. Find the vocabulary word which matches the pronunciations. Record answers.	Pairs or Individual
	Flashcards			Show flashcards to another student and have him/her pronounce word and use it in a sentence.	Pairs
	A	6	2	Unscramble the scrambled vocabulary words. Write the word, with the number of a page in The Bluejackets' Manual where the word is found. Use the words in sentences.	Individual
Colors	A	6	3	Read the selection from The Bluejackets' Manual, page 79 aloud to another student.	Pairs

VII. FOLLOW-UP ACTIVITIES

See Activities Listed Under "Follow-Up Activities"

NAVY VOCABULARY
Lesson 6

Prescription Worksheet 1

MATCHING:

The pronunciations of this lesson's words are given at the left. Match the pronunciation with the proper word. Record the letter in the space. (The accented syllable is underlined.)

1.	loo-ard	_____	a. corps
2.	cox-un	_____	b. boatswain
3.	gun-l	_____	c. forecastle
4.	bo-sun	_____	d. Greenwich
5.	core	_____	e. leeward
6.	key	_____	f. coxswain
7.	yo-man	_____	g. gunwale
8.	led	_____	h. quay
9.	fo-sul	_____	i. ensign
10.	en-sin	_____	j. tackle
11.	take-ul	_____	k. lead
12.	gren-itch	_____	l. yeoman

NAVY VOCABULARY
Lesson 6

Prescription Worksheet 2

DIRECTIONS: The scrambled words below are Navy words with unusual pronunciations. Unscramble the words; write them in the second column. In the third column, write the number(s) in The Bluejackets' Manual where the word is mentioned.

		Vocabulary Word	Page in Bluejacket
1.	dale		
2.	weldare		
3.	uaqy		
4.	nwealug		
5.	sproc		
6.	mayone		
7.	chignerwe		
8.	kelcat		
9.	sinneg		
10.	cotlefsare		
11.	cnxwaiso		
12.	tabnowsai		

DIRECTIONS: Write sentences using at least 8 of the words above.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

NAVY VOCABULARY
Lesson 6

Prescription Worksheet 3

DIRECTION: Open your Bluejackets' Manual to p. 79. Read the section on "Colors," page 79 aloud to another student. Answer the following questions.

1. When are the national ensign and the union jack raised and lowered? What are these called?
2. For what does SDPA stand?
3. At colors what call does the bugle sound?
4. What duties does a boatswain's mate of the watch have at colors?
5. In paragraph 2, what does the word "respectively" mean?
6. Why does the time for evening colors vary?
7. At colors, what actions do personnel in rank take?
8. What is the reason for the actions taken at colors?

NAVY VOCABULARY
Lesson 6

Answers

Prescription Worksheet 1

1. e
2. f
3. g
4. b
5. a
6. h
7. l
8. k
9. c
10. i
11. j
12. d

Prescription Worksheet 2

1.	lead	p. 486	7.	Greenwich	pp. 455,456,457
2.	leeward	p. 476	8.	tackle	
3.	quay		9.	ensign	pp. 79,506
4.	gunwale	p. 201	10.	forecastle	pp. 200,202,309
5.	corps	(see Marine)	11.	coxswain	pp. 87,441-443
6.	yeoman	p. 35	12.	boatswain	pp. 373,25,80,81

Prescription Worksheet 3

See Bluejackets' Manual, 20th ed., p. 79.

NAVY VOCABULARY

Terminal Objective 1.2
Pretest

DIRECTIONS:

Choose the correct Navy term to fill in the blank.

1. The captain kept a _____ of the activities and work completed aboard the ship.

   a. manual b. log c. diary

2. The sailors loaded the equipment on the _____.

   a. quay b. sweep c. Greenwich

3. The person you need to see about typing Admiral Smith's correspondence is _____ Johnson.

   a. major b. coxswain c. yeoman

4. The unidentified object went out of the _____ of the radar tracking center aboard the submarine.

   a. range b. watch c. hold

5. The captain slowed the ship's speed to three _____.

   a. notes b. m.p.h. c. knots

6. John was assigned a _____ next to yeoman Scott.

   a. gear b. list c. berth

7. The ship had a main _____ of 8-inch guns.

   a. magazine b. battery c. strike

8. The sailors were ordered to stow their _____ quickly and report to the main deck.

   a. things b. clothes c. gear

9. The ship entered the _____ of San Diego to refuel.

   a. port b. shore c. berth

10. The two sailors were ordered to _____ the main hatchway before the submarine submerged.

    a. open b. secure c. list

NAVY VOCABULARY

Terminal Objective 1.2
Posttest

DIRECTIONS: Choose the correct Navy term to fill in the blank.

1. The forward part of the ship's main deck where the anchor and associated equipment are located is the _____.

   a. gunwhale b. forecastle c. quay

2. The person who performs office secretarial duties such as typing correspondence, reports and maintaining files is a _____.

   a. coxswain b. boatswain c. yeoman

3. The ships underofficer in charge of the anchors, ropes, rigging and directing some of the work of the crew is the _____.

   a. boatswain b. coxswain c. yeoman

4. The upper edge of a ship's or boat's side is the _____.

   a. forecastle b. berth c. gunwale

5. The person who steers and is in charge of a small boat and its crew is the _____.

   a. coxswain b. boatswain c. yeoman

6. The direction toward which the wind is blowing is the _____.

   a. quay b. leeward c. Greenwich

7. A solid landing place where ships load and unload is called the _____.

   a. gunwale b. tackle c. quay

8. The lowest commissioned officer in the Navy is the _____.

   a. coxswain b. ensign c. boatswain

9. A daily record of a ship's voyage is called a _____.

   a. log b. diary c. manual

10. The largest boat carried by a warship is a _____.

    a. P.T. boat b. lifeboat c. launch